

REMARKS

The foregoing amendment amends claims 1, 3, 4, 9 and 12 and cancels claim 2. Claims 10 and 11 have been withdrawn from further consideration. Now pending in the application are claims 1, 3-5, 7-9 and 12, of which claims 1 and 12 are independent. The following comments address all stated grounds for rejections and place the presently pending claims, as identified above, in condition for allowance.

Interview and Claim Amendments

Applicants thank the Examiner for allowing an interview and discussing the Office Action on November 29, 2005. Applicants amend the claims as proposed during the interview. In particular, claim 1 is amended to incorporate the subject matter of claim 2. Claim 2 is canceled. Claim 12 is amended to recite like limitations. Claims 3, 4 and 9 are amended to depend upon claim 1. No new matter is added. Applicants provide the following arguments based on the discussion with the Examiner during the interview.

Rejection of Claims 1, 5-9 and 12 under 35 U.S.C. §102

Claims 1, 5-9 and 12 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,106,964 ("Voss I") or U.S. Patent No. 6,416,895 ("Voss II"). Applicants respectfully traverse the rejection for the following reasons.

In the foregoing claim amendments, Applicants amend claim 1 to incorporate the subject matter of claim 2. Claims 5-9 depend upon claim 1. In light of the foregoing claim amendments, Applicants submit that the rejection of claims 1 and 5-9 under 35 U.S.C. §102(e) is moot.

Claim 12 is directed to a method of humidifying fuel and oxidant gases supplied to a fuel cell. The method introduces moisture into the fuel gas from the off-gas through *non-porous water permeable membranes* in a humidifying apparatus. The method also introduces moisture into the oxidant gas from the off-gas through *porous water permeable membranes* in the humidifying apparatus.

Applicants respectfully submit that Voss I or Voss II does not disclose introducing moisture into the fuel gas from the off-gas through *non-porous water permeable membranes* in a humidifying apparatus, and introducing moisture into the oxidant gas from the off-gas through *porous water permeable membranes* in the humidifying apparatus, as recited in claim 12.

Voss I relates to humidifying and heating a reactant stream in a solid polymer fuel cell system. Voss I discloses in Fig. 1 a combined heat and humidity exchanger (CHHE) (200) including a water permeable membrane (210). Voss I also discloses that the supply reactant stream and exhaust reactant stream are directed through the CHHE (200), on opposite sides of the membrane (210), preferably in a counterflow configuration. See, Voss I, Column 9, lines 25-30. Voss II is a continuation of Voss I.

Although Voss I and Voss II disclose a humidifier using a water permeable membrane (210), Voss I and Voss II do not disclose introducing moisture into the fuel gas and the oxidant gas from the off-gas through *non-porous water permeable membranes* and *porous water permeable membranes* in the humidifying apparatus, respectively, as recited in claim 12. In light of the foregoing claim amendments and arguments, Applicants submit that Voss I and Voss II do not disclose each and every element of claim 12. Applicants therefore request the Examiner reconsider and withdraw the rejection of claims 1, 5-9 and 12 under 35 U.S.C. §102(e) and pass the claim to allowance.

Rejection of Claims 2-4 under 35 U.S.C. §103

Claims 2-4 are rejected under 35 U.S.C. §102(e) as being unpatentable over U.S. Patent No. 6,106,964 ("Voss I") or U.S. Patent No. 6,416,895 ("Voss II"). Applicants respectfully traverse the rejection for the following reasons.

In the foregoing claim amendments, claim 1 is amended to incorporate the subject matter of claim 2. Amended claim 1 is directed to a fuel cell system having a humidifying apparatus that humidifies supply gases with water permeable membranes. The humidifying apparatus includes first and second humidifiers. The first humidifier includes *non-porous water permeable membranes* to humidify the fuel gas supplied to the anode of the fuel cell by means of the moisture contained in the off-gas discharged from the fuel cell. The second humidifier includes

porous water permeable membranes to humidify the oxidant gas supplied to the cathode by means of the off-gas. Claim 2 is canceled. Claims 3 and 4 depend upon claim 1.

Applicants respectfully submit that Voss I or Voss II does not teach or suggest that the first humidifier includes *non-porous water permeable membranes* to humidify the fuel gas supplied to the anode of the fuel cell by means of the moisture contained in the off-gas discharged from the fuel cell, and the second humidifier includes *porous water permeable membranes* to humidify the oxidant gas supplied to the cathode by means of the off-gas, as recited in claim 1.

In the Office Action, the Examiner asserts that utilizing a plurality of humidifiers in either Voss I or Voss II would be obvious to one of skill in the art at the time the invention was made. See, the Office Action, page 4, lines 1-6. Applicants respectfully disagree. Although Voss I and Voss II teaches a humidifier using a water permeable membrane (210), Voss I and Voss II, do not teach the first and second humidifiers for humidifying the fuel gas and oxidant gas supplied to the anode and cathode *using non-porous water permeable membranes* and *porous water permeable membranes*, respectively, as recited in claim 2.

With the arrangement of the claimed invention, the non-porous water permeable membranes can prevent the fuel gas from reacting with the oxidant gas contained in the off-gas before the fuel gas reacts with the supplied oxidant gas, while the porous water permeable membranes can provide a sufficient humidification for the oxidant gas since the porous water permeable membrane is permeable to moisture and the oxidant gas in the off-gas. Voss I and Voss II do not provide the advantages of the claimed invention.

In light of the foregoing claim amendments and arguments, Applicants submit that Voss I and Voss II do not teach or suggest all of the limitations of claim 1. Claims 3 and 4, which depend from claim 1, are not rendered obvious over the cited prior art references. Applicants therefore request the Examiner reconsider and withdraw the rejection of claims 2-4 under 35 U.S.C. §103(a) and pass the claim to allowance.

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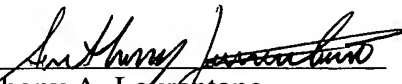
Conclusion

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly the Examiner is respectfully requested to pass this application to issue. If there are any remaining issues or questions, we invite the Examiner to call Applicants' representative at the telephone number listed below.

Applicant believes no fee is due with this statement. However, if a fee is due, please charge our Deposit Account No. 12-0080, under Order No. IIW-014 from which the undersigned is authorized to draw.

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Respectfully submitted,

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